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## Assessment of the Family Support on the Improvement of Health-Related Quality of Life for Alcoholics and Smokers in Type 2 DM Patients in Makassar Municipality

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### Abstract

Positive dimensions of family functioning are an important aspect to boost adherence behaviors in diabetic patients in increasing their quality of life, especially for alcoholics and smokers with type 2 DM. Concerning to this issue, this study aims to assess family support on the improvement of health-related quality of life for smokers and alcoholics in type 2 DM patients at coastal areas in Makassar Municipality. The study used a cross-sectional study. Samples were alcoholics and smokers with type 2 DM who stay at coastal areas in Makassar Municipality. Samples were males and total samples were 366 respondents. Data were collected using questionnaires and interview with respondents using the WHO-QoL survey instrument and the questionnaires of smoking habits and habitual consumption of alcohol. Analysis of data used Yates' correction and multivariate regression.

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Stress status was assessed using the DASS (the Depression Anxiety Stress Scales). All data were processed using SPSS Version 21. Results of the study indicated that family support ( $p\text{-value}=0.009 < \alpha=0.05$ ), smoking habits, habitual consumption of alcohol ( $p\text{-value}=0.000 < \alpha=0.05$ ), and level of stress had significant correlation with health-related quality of life in type 2 DM patients. Conclusion of study is Positive family support showed significant impact on the improvement of health-related quality of life for smokers and alcoholics in type 2 DM patients at coastal communities in Makassar Municipality. It was concluded that family support improved health-related quality of life in type 2 DM patients classified as smokers and alcoholics.

**Keywords:** Family Support; Smoking Habits; Habitual Consumption of Alcohol; Level of Stress; Health-Related Quality of Life (HRQoL) Type 2 DM Patients.

## 1. Introduction

Quality of life related to health in type 2 diabetes mellitus is an important aspect since this disease can reduce physical vitality, aggravates glycemic condition, exaggerates risk of disease complications and exacerbates condition of diabetes mellitus patients in the short-and long-term. Global prevalence of type 2 diabetes mellitus patients regularly shows an ascending trend every year, and the predicted number of type 2 diabetes mellitus patients derived from global diagnoses accounts for up 439 million cases in the year 2030 [1].

Referring to a national level, the estimated prevalence of type 2 diabetes mellitus in Indonesia achieves 21.3 million cases in 2030. Prevalence of diabetes mellitus in Indonesia continually rises in the last eight years, as reported by the National Basic Health Research. In 2007, it achieves 1.1% [2] and still continues from 1.5% in 2010 to 2.1% in 2013 [3]. In 2014, it slightly gets greater to 5.8% [3] and rises to 9.1 million cases in 2015 [5]. Referring to the provincial level, prevalence of diabetes mellitus in South Sulawesi Province shows a real rising trend in the last six years [2]. It shows an ascending trend in the last three years with 14,067 cases in 2012, 14,604 cases in 2013 and 21,452 cases in 2014 respectively [5] and this province is at the third uppermost level of diabetes mellitus cases of all provinces in Indonesia [3]. Diabetes mellitus causes adverse impacts on quality of life related to health in diabetic patients in which this disease is affected by several factors, such as gender, age, ethnic/race differences, socioeconomic factors, psychosocial factors, obesity, physical activities, habitual consumption of alcohol, smoking habits, disease complications, poor social control, inadequate health management, solitude, social support, dietary habits, sociodemographic factors, obesity, cardiovascular disease, low income, and hypoglycemia [6,7,8,9]. For several decades, a great of deal research have focused on understanding the inherent factors leading to change in adherence behaviors among diabetic patients. One of main sources in increasing quality of life related to health in diabetic patients is family support.

It has impact on the health of people with diabetes, and family members are considered a significant source of social support for individuals with diabetes, especially for adults with type 2 DM in which the performance of diabetes self-care activities is associated with improved glycemic control and prevention of diabetes-related complications, hospitalizations, and mortality [10]. Positive dimensions of family functioning, including family guidance and control over the management of diabetes, are related to increases in adherence behaviors. Furthermore, among elderly patients, social support from family and friends helps patients to remain active in

their care when faced with physical, social, and economic vulnerabilities. This aspect relates with real sociocultural and economic condition among costal communities in Makassar Municipality.

Issues of quality of life related to health as described above instigate this study to assess the positive impact of family support on the improvement of health-related quality of life (HRQoL) for smokers and alcoholics in type 2 DM patients in the regional context at provincial level in Indonesia among type 2 DM patients at coastal areas in Makassar Municipality.

## **2. Methods**

### **2.1 Data Collection**

This study used a cross-sectional study. Total respondents were 366 males. Data of samples were collected from three local community health centers in the scope of Technical Implementation Unit of Public Health Providers, i.e. the Pattingaloang Community Health Center, the Tabaringan Community Health Center and the Barombong Community Health Center respectively.

Data of samples were collected using questionnaires and interview with respondents using the WHO-QoL survey instrument and the questionnaires of family support and smoking habits/habitual consumption of alcohol. Agreement for collecting data was reviewed and approved by the Research Ethics Committee of Medicine Faculty of Hasanuddin University as stated in the Recommendation Letter of Research Ethics issued in the registration no. 2034/H4.8.4.5.3/PP36-KOMETIK/2015.

### **2.2 Data Analysis**

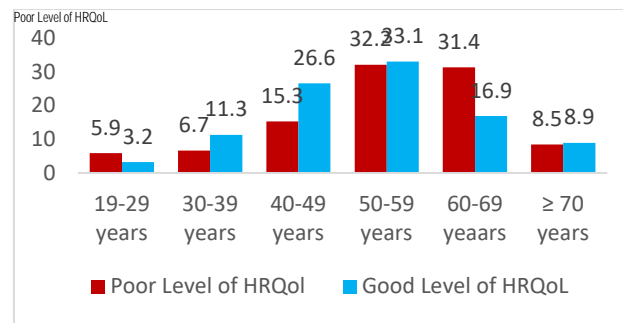
Yates's correction was used in this study by analyzing two dichotomous variables (good level of HRQoL and poor level of HRQoL) for smokers and alcoholics with type 2 DM owing to family support. Multivariate regression was used to determine whether the correlation of family support, smoking habits, habitual consumption of alcohol and stress was significant or insignificant. Stress was assessed using the DASS (the Depression Anxiety Stress Scales). All data were processed using SPSS Version 21.

## **3. Results**

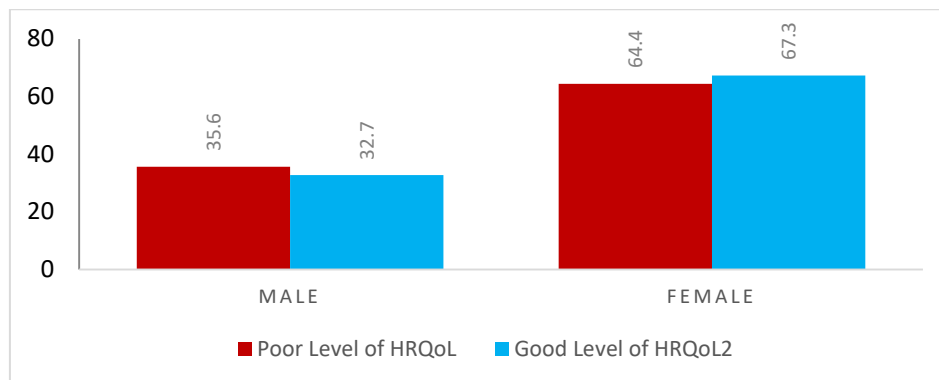
### **3.1 The demographic and baseline characteristics of cohort**

As shown in Figure 1 to Figure 5, the demographic and baseline characteristics of cohort consisted of age, education, employment, and marital status. In Figure 1, most respondents were at a 50-to-59-year old scale and this age group consisted of 118 respondents (32.2%) at good level of HRQoL and 82 respondents (33.1%) at poor level of HRQoL.

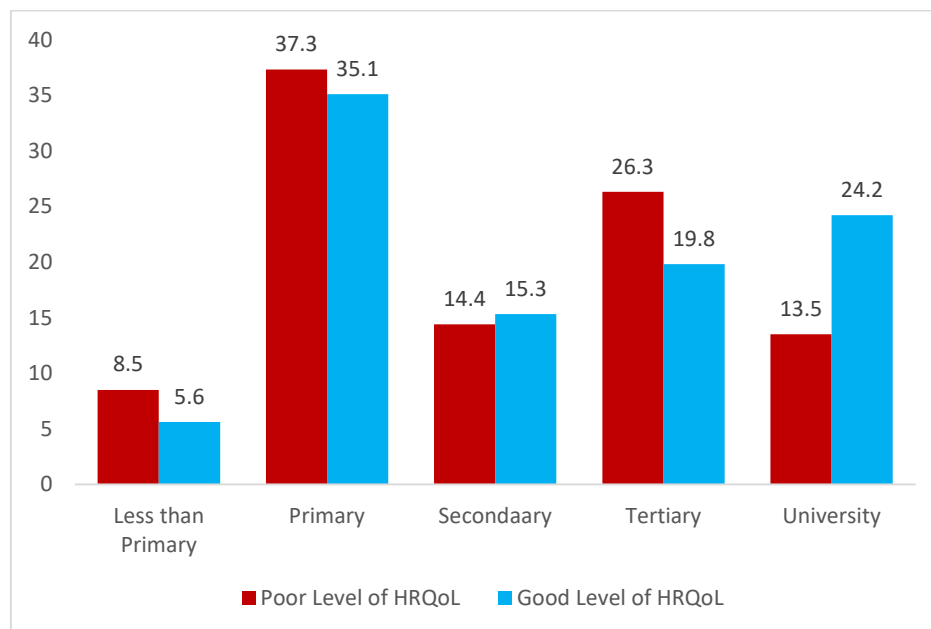
Total type 2 DM patients were 366 respondents that consisted of 123 males (33.6%) dan 243 females (66.4%) in which female respondents were more than male respondents in Figure 2



**Figure 1:** Category of Age of Type 2 DM Respondents.



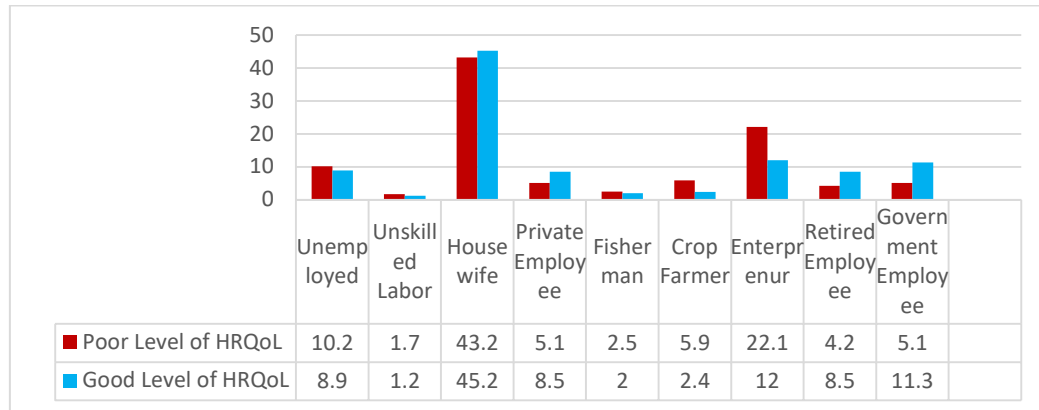
**Figure 2:** Status of Gender of Type 2 DM Respondents.



**Figure 3:** Status of Education of Type 2 DM Respondents.

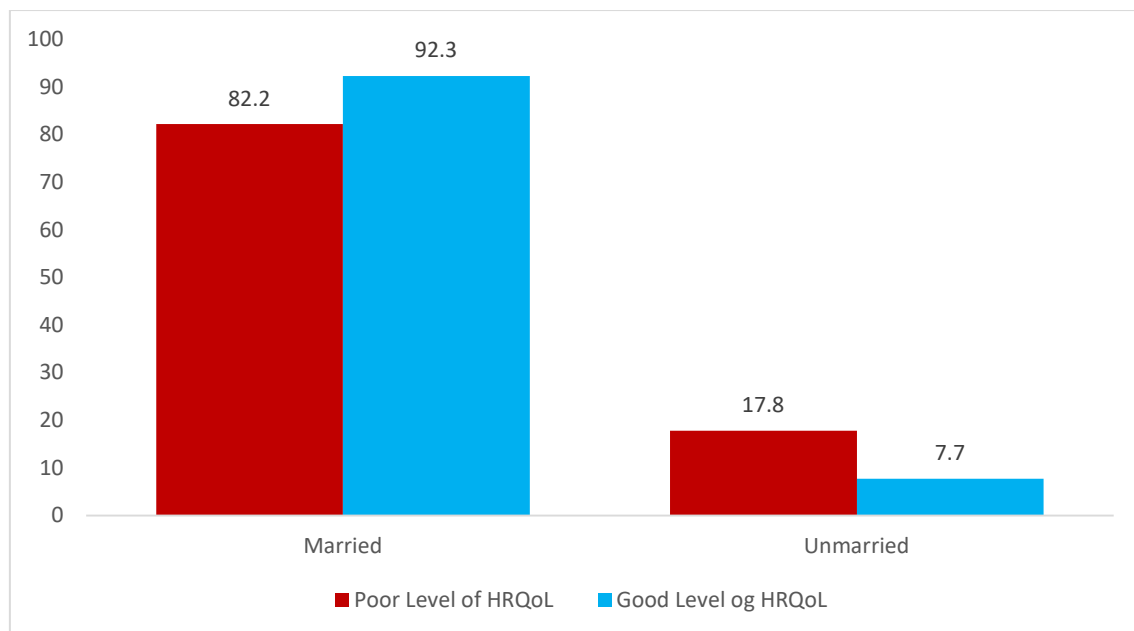
Most respondents were at primary level of education and comprised 44 respondents (37.3%) at good level of HRQoL and 87 respondents (35.1%) at poor level of of HRQoL, as shown in Figure 3.

Referring to the category of employment, respondents classified as fishermen were in greatest number than other respondents and this group included 51 respondents (43.2%) at good level of HRQoL and 112 respondents (45.2%) at poor level of HRQoL, as indicated in Figure 4. Respondents at the category of married status were more than those of unmarried status and this group



**Figure 4:** Employment Status of Type 2 DM Respondents

Respondents at the category of married status were more than those of unmarried status and this group included 97 respondents (82.2%) at good level of HRQoL and 229 respondents (92.3%) at poor level of HRQoL respectively, as shown in Figure 5.



**Figure 5:** Marital Status of Type 2 DM Respondents

### 3.2 Results of the Analysis

**Table 1:** The Correlation between Employment, Family Support, Smoking Habits, Drinking Alcohol and HRQoL in Type 2 DM Patients in Makassar Municipality

Variables	Health-Realted Quality of Life				p-Value
	Poor		Good		
	n	%	n	%	
<b>Stress</b>					
Yes	72	45.3	87	54.7	0.000
No	46	22.2	161	77.8	
<b>Family Support</b>					
No	55	41.0	79	59.0	0.009
Yes	63	27.2	169	72.8	
<b>Smoking Habits/Habitual Consumption of Alcohol</b>					
Yes					0.000
No	21	56.8	16	43.2	
	97	29.5	232	70.5	

Source: Primary Data

**Table 2:** Multivariate Analysis of Correlation of Family Support, Smoking Habits, Habitual Consumption of Alcohol, Stress and HRQoL in Type 2 DM Patients

Variable	B	SE	Wald	p	Exp(B)
Family Support	0.550	0.239	5.293	0.021	1.734
Smoking Habits/Habitual Consumption of Alcohol	0.982	0.369	7.085	0.008	2.669
Stress	0.972	0.236	16.981	0.000	2.643
Constant	-1.533	0.197	60.570	0.000	0.216

Source: Primary Data

Type 2 DM patients who did not gain family support showed health-related quality of life (HRQoL) amounted to 79 respondents (59.0%), whereas, type 2 DM patients who gained family support showed improved health-related quality of life (HRQoL) amounted to 169 respondents (72.8%). Results of this study revealed that family support and health-related quality of life (HRQoL) had statistically significant correlation in type 2 DM patients ( $p\text{-value} = 0.009 < \alpha = 0,05$ ) and implied that type 2 DM patients who gained family support showed improved HRQoL. Of 37 type 2 DM patients classified as smoker or alcoholic, most of them had poor HRQoL amounted to 21 respondents (56.8%), whereas, among 329 type 2 DM patients classified as non-smokers or non-alcoholics, 232 patients had improved HRQoL (70.5%). It meant that smoking habits or habitual consumption of alcohol and HRQoL had significant correlation in type 2 DM patients ( $p\text{-value} = 0.001 < \alpha = 0.05$ ) and type 2 DM patients classified as smokers and alcoholics had poor health-related quality of life (HRQoL).

Among all 159 type 2 DM respondents suffered by stress, 72 respondents (45.3%) had poor HRQoL, whereas, of 207 type 2 DM respondents who did not experience stress, 161 respondents (67.8%) had good HRQoL. Results of this study indicated that stress and HRQoL had statistically significant correlation in type 2 DM patients ( $p\text{-value}=0.000 < \alpha=0.05$ ). It meant that type 2 DM patients who experienced stress had poor HRQoL.

## **4. Discussions**

### ***4.1 The Characteristics of Type 2 DM Patients Classified as Smoker and Alcoholic***

Total type 2 DM patients were 366 respondents that consisted of 123 males (33.6%) dan 243 females (66.4%) in which female respondents were more than male respondents. Based on the category of age, all respondents were classified at later adolescent age ( $\geq 19$  years old) to very old age ( $\geq 75$  years old) in which the most common age among all respondents were at a 50-to-59 year old scale accounted for 120 respondents (32.8%), and the least number of respondents were at a 19-to-29 year old scale amounted 15 respondents (4.1%). 51 respondents (13.9%) were classified under 40 years old. Referring to the category of employment status, the demographic and baseline characteristics of cohort stratified in this study consisted of unemployed, labor/pedicab driver, private employee, fisherman, crop farmer, retired employee, government employee and entrepreneur. Referring to marital status, the most number of respondents were married accounted for 326 respondents (89.1%).

### ***4.2 Status of HRQoL for Alcoholics in Type 2 DM Patients by Family Support***

Family support gives psychological balance in type 2 DM patients and ultimately will create well-being to all other family members [14]. Results of the study revealed that family support and HRQoL had statistically significant correlation ( $p\text{-value}=0.009 < \alpha=0.05$ ). Social support from family members including wife, husband, children, or parents motivate type 2 DM patients have a fully conscious mind that they do not feel deprived and have willingness to accept their illness that assists their therapy. Social support can be given by recalling them to eat or drink medicine, giving advices to follow dietary rules, going together with patients to check-up their blood glucose level to physicians, giving suggestions to do physical exercise or engaging in sports together with diabetic patients. Social support and good encouragement from social surroundings and family members can build well-being in DM patients. Social support derived from family will create the consciousness to the acceptance of self in spite of suffering diabetes mellitus and mediates therapy by showing cooperative manner. Results of the study indicated that 63 respondents (27.2%) had improved HRQoL by social support from their family members. There were 2 DM respondents who had poor HRQoL due to their unawareness to follow suggestions from their families with the result in reduction of their quality of life. There were 79 respondents (59.0%) who had good HRQoL without any regular suggestions from their family members. Their quality of life achieved good level for they have self-awareness to adhere healthy suggestions from their family members, such as taking regular medication, regular check-up of blood glucose level, and keep on doing physical exercise and stick on dietary guidance for type 2 DM patients. Proper control of their blood glucose makes them to keep away from hypoglycemia or other complications. Alcohol contains many carbohydrates and calories causing disorder of glucose regulation and stimulates the increase level of blood glucose in diabetic patients who consume alcohol than other healthy beverage and food. It causes hypoglycemia dan hyperglykemia and disturbs liver to release blood glucose making reduction of blood glucose level. Alcohol disturbs blood glucose in diabetic patients by disrupting blood glucose metabolism in type DM patients with uncontrolled blood glucose. Blood glucose pressure will rise for an individual who consume ethyl alcohol more than 60 ml/day [23]. According to Suyono in 2013, alcohol restricts process of lipid oxidation and inhibits caloric and lipid oxidative process that affects to the increase of body weight and it also causes harmful effects on endocrine gland by

releasing epinephrine that induces transient hyperglykemia and hyperlipidemia with results in contraindication in diabetic patients [22]. As shown in this study that there were 97 respondents (29.5%) at the category of non-smoker and non-alcoholic had poor HRQoL. This condition was due to those patients were not adhere medication, ignored recommended dietary rules, poor family support as indicated in their blood glucose levels, stress, or complications that affected to their quality of life. Conversely, there were 16 respondents (43.2%) had good HRQoL at the category of smoker and alcoholic. They had good HRQoL in that they adhered on diabetic medication, conducting regular healthy diet, and gained family support as shown in their normal blood glucose level and could avoid complications, and hence they gained good HRQoL. Coffman in 2008 states and family members are a significant source of social support for individuals with diabetes. Family support significantly correlates with the medication adherence of DM patients that affects their quality of life [15]. According to Allen (2006), family support by gentle manner and good awareness, emotional support related to blood glucose monitoring, stick on healthy diet rules and regular physical exercise prove self-efficacy for diabetic patients in regular medication for diabetic patients in which appropriate self-care for diabetic patients could increase their quality of life [16]. Mills in 2008 also states that the essential thing is how to enhance self-awareness and self-care in diabetic patients that diabetes mellitus is a long-standing illness in diabetic patients to increase their awareness to managing their illness [15]. In addition, family members living with DM patients mediate their awareness by giving social support and enlarge their insight to increase their self-efficacy.

#### ***4.3 Status of HRQoL for Smokers in Type 2 DM Patients by Family Support***

Smoking habits in type 2 DM can reduce quality of life in type 2 DM patients. This fact is revealed in this study where smoking habit or habitual consumption of alcohol showed significant effect on type 2 DM respondents ( $p\text{-value} = 0,001 < \alpha = 0.05$ ). Smoking has significant correlation on diabetes mellitus as it exacerbates diabetic condition, allowing fats and plaque to stick to vessel walls. It worsens level of blood of glucose in diabetic mellitus patients. Hazardous substances in a cigarette cause adverse effects on vessel walls that lead to high blood pressure and stroke also causes inflammation in diabetic patients and this condition is difficult to curable and hence diabetic patients are more likely having the risk to experience amputation. Smoking increases the risk of complications in type DM patients as indicated in a meta-analysis by Carole Willi et.al of University of Lausanne in Swiss in which heavy smokers in DM patients has higher risk diabetes mellitus. For individuals who smoke an average 20 cigarettes per day have higher risk of diabetes mellitus (62%) than non-smoker individuals [20]. Smoking causes disease complications in diabetic patients. The most deadly complication in diabetic patients is high blood pressure. Chemical substances in a cigarette cause deleterious effects on vessel walls that lead to high blood pressure and stroke. In addition, smoking causes inflammation, and permanent inflammation in diabetic patients is difficult to curable and hence they are more likely having the risk to experience lower limb amputation. This condition will reduce their quality of life. This study coincides with a study conducted by [24] in which smoking habits has significant effect on poor health-related quality of life in type 2 DM patients. It has also significant relationship with poor health-related quality of life in type 2 DM patients, as affirmed by Andrea, et.al. in 2014 ( $p\text{-value} = 0.001 < \alpha = 0.05$ ) [12] and a study performed by Ranjita Misra dan Julie Lager (2009) that smoking has significant correlation with health-related quality of life among type 2 DM patients ( $p\text{-value} = 0.026 < \alpha = 0.05$ ) [13].



#### **4.4 Status of HRQoL due to Stress for Alcoholics and Smokers in Type 2 DM Patients**

Stress is one of the main factors affecting quality of life in diabetic patients. Stress leads to anxiety and unsecure feelings that affects poor condition of quality of life in diabetic patients, and the most fatal cause of stress is hasty death. Deprived social and psychosocial condition cause long term stress. Continuous anxiety, unsecure feelings, inferior feelings, social isolation and uncontrolled burden of activities during work and household problems are the causes of poor health related quality of life in diabetic patients. Results of this study showed that stress and health-related quality of life in type 2 DM patients had statistically significant correlation ( $p\text{-value}=0.000<\alpha\ 0.05$ ). Level of  $p$ -value showed positive direction and implied that the higher stress, the lower health-related quality of life in diabetic patients. Therefore, stress could reduce health related quality of life in diabetic patients. Stress in type 2 DM patients leads to disturbance of endocrine (hormonal) and increase blood glucose level as long as prolonged. This condition causes adverse effect on the status of health in type 2 DM patients and reduces their quality of life. Diabetic patients should decide to stick on healthy rules to achieve good status of their HRQoL. However, the most awful thing, accumulation of strict lifestyle rules and a profusion of information is in fact sometimes make them to be anxious and depressed. Stress causes the rise of epinephrine and cortisol to induce the increase of blood glucose and supply of energy in the body used to do activities. Level of blood glucose achieves normal level during stress. Stress may trigger complications in diabetic patients that restrict their daily activities and hence it reduces their quality of life. This study found that there were 46 patients (22.2%) experienced stress and showed good level of HRQoL. This condition is caused by ignorance of type 2 DM patients follow medication rules, unawareness to take recommended healthy diets, infrequent monitoring blood glucose, seldom to do sport. Lifestyle among them leads to complications that cause poor quality of life. Complications lead to deleterious effects on diabetic patients by restraining metabolic process and leads to reduction of their HRQoL, either in direct effect in the form hormonal disturbance or indirect effect by complications. There were 87 respondents (54.7%) in the status of stress had good level of HRQoL. They could manage their stress appropriately through positive thinking to gain a pleased mood. To build this, they should have awareness and willingness to do transformation of healthy lifestyle. By grasping such a commitment, living with diabetes motivates to do self-efficacy to tackle complications. This study associates too with a study reported by Glover and his colleagues (2016) in which African American classified in low-income social class reveals that stress related with poor HRQoL in type 2 DM patients [25]. This is also consistent with a study revealed by Bhagawan and his colleagues (2016) in India in which HRQoL in diabetic patients is lower than those with higher depression [26].

#### **5. Conclusions**

Results of this study indicated that family support had significant role in increasing health-related quality of life for smoker and alcoholic in type 2 DM patients. In addition, smoker and alcoholic and stress had significant correlation with family support by their quality of life.

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